

VI.—*On the Presence of certain Secreting Organs in Nematodea*. By ALEXANDER MACALISTER, F.R.C.S.I., Demonstrator of Anatomy, Royal College of Surgeons, Ireland.

THE existence of special secreting organs in the Nematoid Entozoa is by no means a discovery of very modern date; for several of the earlier helminthologists have described various parts of the animals in this class as subservient to the function of secretion. Of late, however, our knowledge of these structures has been much extended, mainly through the increasing perfection of the microscope, which has thrown light upon all branches of invertebrate anatomy, and has shown us greater complexities of structure in those creatures which had previously been regarded as of simpler organization.

Four series of these glandular organs have been already described in different Nematoids; and I think that the apparatus which I am about to notice is entitled to rank as a fifth kind of secreting organ, separate in function from any of those at present known. Those already recognized are—(1) The salivary cæca described by Owen in *Gnathostoma spinigera*, consisting of four small blind tubes communicating with the mouth: similar organs Siebold has noticed in *Strongylus striatus*; and although some have doubted the function assigned to them (Bagge, in Appendix to 'Thesis de Evolutione *Strongyli auricularis*,' &c.), yet I think we are justified in adopting Owen's view as being correct. (2) Cloquet, in his work on the anatomy of *Ascaris lumbricoides*, describes the thickened parietes of the œsophagus as being glandular, probably secreting a fluid to assist in the assimilation of the food. (3) There are in many species intestinal cæca with which Owen associates an hepatic function. Mehlis, in the 'Isis' for 1831, figures and mentions several of these; and Siebold, in his 'Anatomy of the Invertebrata,' refers to their occurrence in several species, especially in *Ascaris heterura*, *A. semiteres*, *A. depressa*, *A. angulata*, *A. ensicaudata*, *A. mucronata*, and *A. osculata*. Leidy, in the 'Smithsonian Contributions,' pt. 5. p. 49, pl. 7, figures and describes one of these organs in *Thelastomum appendiculatum*; and Diesing notices another in a species of *Ascaris* infesting the Dugong. The 4th and last-described gland (leaving out of account the secreting parts of the reproductive apparatus) is the curious tubular organ described by Siebold (Bagge, *loc. cit. suprâ*) in the *Strongylus auricularis* and *Ascaris brevicaudata*, *A. acuminata*, *A. paucipara*, and *A. dactyluris*, which opens near the middle of the body on the ventral aspect, and which in the last-named species I have on several occasions traced with considerable facility.

To these four I think we may add another group of organs which seem as distinctly glandular as any of those above referred to. These are present in the *Ascaris dactyluris*, Rud., a small white Entozoon, which inhabits in enormous quantities the large intestine of *Testudo græca*. In the interior of these parasites, as I have elsewhere described*, the lowest part of the club-shaped intestine exhibits a small dilatation, immediately inferior to which it suddenly contracts into a narrow rectum, that passes downwards and forwards to the anus, forming an obtuse angle (re-entrant forwards) with the upper part of the alimentary canal. Surrounding the constriction which marks the origin of the rectum, are four small ovate or pyriform bodies, granular in appearance, usually seeming as though solid, in other subjects appearing slightly excavated. Their inner aspect is placed in very close apposition to the wall of the gut; so that at first it seemed to me as if they opened directly into the narrowed commencement of the rectum; however, when carefully examined by reflected light, my friend Dr. Barker has shown to me that, at least in some specimens, such is but an apparent and not a real attachment, and that the true connexion between these oval bodies and the intestine is by means of long fine ducts, which open into that canal immediately above the anus†. Sometimes these tubes pass from the inner or intestinal side of the glands; in other subjects the masses narrow into a somewhat flask-like shape, and have their attenuated necks continuous with the duct: in the former case the organs were globular, in the latter they seemed rather pyriform. In another specimen the sacs were calcarate, with their curved projecting spurs directed upwards and outwards. No appearance of nerves or nerve-ganglia was visible in connexion with them; and the lateral and antero-posterior tegumentary lines dipped inwards to come almost into contact with their outer coat.

Whether these bodies exist in other species of Nematoids or not, I cannot say; but, as far as my observations have extended, I have not succeeded in finding either themselves or any notice of such an organization elsewhere. In the species under consideration, however, they are unmistakeably distinct and constantly present; for out of many specimens examined by Dr. Barker and myself, both separately and conjointly, we were able to detect their existence in every individual.

It would be difficult, if not almost impossible, to predicate as to the exact nature of these bodies; but I can only conceive of

* "On the Anatomy of *Ascaris dactyluris*," read before the Dublin Natural History Society, June 1865.

† This, however, does not seem to be the invariable mode of attachment; for I have failed to find the duct-like processes in many individuals.

two tenable hypotheses regarding them. They have evidently nothing to do with the reproductive apparatus, as they are equally present in both males and females, and seem to have no connexion in either with the sexual organs. They might, however, be either secreting glands or intestinal cæca. The latter hypothesis I should be inclined to regard as very improbable; for though cæca are described and figured by Leidy, of Philadelphia, and others, as I have before mentioned, yet in all those species in which they occur we find them placed much higher in the alimentary canal, often at the point where the stomach or intestine joins the œsophagus: they are usually single or unsymmetrical, always hollow; and though often communicating with the intestine by a narrow neck, yet rarely or never is that structure so suddenly attenuated and duct-like as is constantly the case in these secreting organs in *Ascaris dactyluris*. We are thus led to adopt the last hypothesis, that they are special glandular structures—an opinion which, I think, is supported by their numbers, by their thick, solid, granular walls, by their long ducts, when present, and by their invariably low position with regard to the alimentary canal. This latter point is also of much importance in relation to the function fulfilled by these bodies, if glandular; for as their secretion would be poured into the lowest portion of the rectum, it could not be to any extent excrementitious in its nature, but must be directly evacuated before absorption could take place; so we may regard these organs as a means of evolving effete matter from the system: mayhap they might be among the earliest examples of a renal apparatus in the animal kingdom; and if so, certainly they are the first examples of such having been found in the Entozoa. Indeed, as a general rule among the lower departments of animal life, the appearances of renal organs are more or less equivocal: even in the Insecta the Malpighian tubes (by far the most distinct urinary apparatus in the Articulata) were often mistaken for hepatic organs, until Brugnatelli and Wurtzer proved that these canals contained urate of ammonia in the Silkworm, as Meckel afterwards demonstrated in *Melolontha* (Archiv für Physiologie, 1816, 1818, 1826). In Myriapoda the same tubular structure obtains with tolerable distinctness; and in Crustacea we have the urinary system represented by the tubes traced by Milne-Edwards in *Maia*, by Duvernoy in *Portumnus*, and by Meckel in *Palaemon* and others. Usually these are cæca, which open sometimes into the pylorus but occasionally into the rectum. No representative organ has been, to my knowledge, described in Annelida. In Echinodermata Jäger has referred to the slightly branching sinuous tubes of Holothuridæ as being renal in their nature; but Müller, who describes these structures under the name of the Cuvierian

organs, seems rather doubtful as to their function. Below these in the scale of nature we meet with no distinct vestiges of urinary excreting organs; so if my hypothesis regarding the nature of these above-described bodies be accepted, they will rank as either the first or the second early traces of such glands as yet found in the animal kingdom.

VII.—*Description of a new Species of Corvina from the Gambia.*

By Dr. ALBERT GÜNTHER.

MR. MOORE, Curator of the Liverpool Free Public Museum, has kindly sent for my inspection a Sciænoid Fish collected by J. Lewis Ingram, Esq., at Bathurst, on the River Gambia, which proves to be an undescribed species of the genus *Corvina*, for which I propose the name of

Corvina Moorii.

D. $8\frac{1}{25}$. A. $\frac{2}{7}$. L. lat. 64. L. transv. $7/x$.

This species is distinguished by its broad and obtuse head, similar to that of *Collichthys*. The eye is comparatively small, about one-ninth of the length of the head, and only one-half of the extent of the snout. Interorbital space very broad, convex, its width being one-third of the length of the head. Hind margin of the præoperculum obliquely descending backwards, with short spinous teeth at the angle and along the margins. Snout very obtuse; jaws with narrow bands of short cardiform teeth, those of the outer series being much larger and conical. Cleft of the mouth of moderate width, situated at the lower side of the snout, the maxillary extending to behind the hind margin of the orbit.

The length of the head is more than the depth of the body, and one-fourth of the total length (without caudal). Scales of moderate size, irregularly arranged. Pectoral fin considerably longer than the ventral, as long as the post-orbital part of the head. Dorsal spines of moderate strength, not flexible; the second is the longest, and rather more than half as long as the head; the soft dorsal fin of moderate height. Caudal fin convex, slightly produced in the middle. The second anal spine strong, two-thirds as long as the first soft ray, and nearly one-third as long as the head.

Uniform blackish brown, the centre of each scale being lighter; fins black.

The specimen is 20 inches long.

Numerous species of Acanthopterygian fishes, especially from the west coast of Africa, show osseous tumours in some parts of